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Through the Looking Glass: Why EVM Is an Essential Risk Mitigation Measure for Decision Makers and Program Managers

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Abstract

The author has written this paper to defend and strengthen the use of risk mitigation measures inherent in the implementation, maintenance, and surveillance of a government contractor’s business system (CBS)¹, specifically the contractual addition of the Earned Value Management System (EVMS; DFARS 252.234-7002) clause.² The contractor and the United States Government’s ability to engage the **right people, processes, and tools at the right time** is essential to effective program management policy and control (Hite, 2010. p. 23).³ This course of action will provide the stakeholders with the capabilities required to plan and execute the program/project⁴ to support **proper stewardship of taxpayer dollars**. The projects performance outcomes provide lessons learned “through the looking glass” that will ensure objective and rationale for the measurements of reliability, availability, and maintainability⁵ of a compliant EVM business system. These risk mitigation measures objective is to **reduce project cancellations, strengthen national security** and build the **domestic industrial base** sourcing of goods and services.

Research Issue

Why is it imperative for program managers and decision makers to use EVM as a risk mitigation measure?

Research Results Statement

It takes a whole-of-government approach by Department of Defense (DOD), National Aeronautics and Space Administration (NASA), and General Services Administration (GSA) to defend and protect the world’s dependence on the sea, air, and space. By embracing EVM as a risk mitigation measure, through legal and regulatory processes, the federal government’s procurement of Made in America⁶ products will promote economic opportunities to grow American small businesses that strengthen the Defense Industrial Base (DIB) and promote the national security strategy. The implementation and use of

¹ Contractor business system and CBS are used interchangeably throughout the document.

² DFARS 252.242-7002, Earned Value Management System (2011, May). https://farclause.com/FARregulation/Clause/DFARS252.234-7002_Basic-earned-value-management-system#gsc.tab=0

³ Hite, Randolph C. (2010, August). Organizational Transformation: A Framework for Assessing and Improving Enterprise Architecture Management (Version 2.0). (GAO-10-846G), Government Accountability Office.

⁴ Program/project will be used interchangeably throughout document.

⁵ DOD Guide for achieving Reliability, Availability, and maintainability, August 3, 2005

⁶ White House (2021a, January 25). Executive Order 14005. Section 4. (a) *Ensuring the Future Is Made in All of America by All of America's Workers*. <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/25/executive-order-on-ensuring-the-future-is-made-in-all-of-america-by-all-of-americas-workers/>



EVMS, system surveillance, and Integrated Baseline Reviews (IBRs), through the roles of the contracting officer, program manager, functional specialist, and additional stakeholders are essential to a fundamental assessment of the contractor's performance. These measures enhance risk mitigation by controlling cost, schedule visibility, and enhancing technical readiness.

Each year, the federal government increases the funding of developmental contracts as a measure to "Protect Sea, Air, and Space" (National Security Strategy, 2022, October 12).⁷ These efforts aim to protect the United States interests in developing technologies, creating economic opportunities, and enabling climate surveillance, and to responsibly oversee the space environment. In addition, value is added to the taxpayer, federal government, and the National Security Strategy as follows:

Biden-Harris Administration's National Security Strategy,

By enhancing our industrial capacity, investing in our people, and strengthening our democracy, we will have strengthened the foundation of our economy, bolstered our national resilience, enhanced our credibility on the world stage, and ensured our competitive advantages. (Biden-Harris Administration's National Security Strategy, 2022)

Three recommendations for consideration: **1.** Require and provide continuous learning to all stakeholders (government and contractor). Research shows that subject matter knowledge increases the likelihood of successful problem resolutions "...experiential learning offers a way to ensure we are imparting not just rote learning and certifications but providing our people the knowledge, skills, and experience to effectively control the efforts we charge them to lead..."⁸ **2.** Promote regular and reoccurring EVMS surveillance throughout the project's lifecycle, reveals whether the internal controls and business management practices comply to the 32 guidelines. **3.** Implement a federal government consortium between all stakeholders from Federal Agency's, Services, and Industry, as this will provide effective and efficient cross functional lessons learned.

The results are clear that the federal measures enacted by The Banking Act of 1933 and the creation of the EVM 32 guidelines criteria for industrial management systems in 1967 promote stakeholder confidence. It takes a whole-of-government approach to provide government oversight and insight to mitigate fiscal financial risk and ensure the stewardship of taxpayer resources.

Introduction

This paper analyzes the whole-of-government approach to demonstrate that EVM, a program management best practice tool, is a key principle of risk management, budgeting, contracting, and capital asset acquisition, performance-based management requirement of federal agencies, as noted in the Office of Management and Budget (OMB) Circular A-11, Federal Acquisition Regulation (FAR), Subpart 34.2 requires that EVM systems comply with the Electronic Industries Alliance (EIA) Standard 748, and Defense Federal Acquisition Regulation Supplement (DFARS), Subpart 234.201,⁹ which allowed for more stringent

⁷ Biden-Harris Administration's National Security Strategy (2022, October 12). Biden-Harris Administration's National Security Strategy.pdf (whitehouse.gov)

⁸ Pickar, Charles. (2020), Naval Postgraduate School, Acquisition Research Symposium. *Learning from Experience: Acquisition Professional Education for this Century*, SYM-AM-20-070.pdf (nps.edu)

⁹ National Defense Industry Association. (2016, October). U.S. Federal Agency EVMS Policy Summary. Federal Agency EVM Policy Summary (ndia.org)



government oversight of contractors. The USA spending for all budget function for FY 2023 is \$3.7 Trillion. The total USA spending is shown by state geography infographic from the official website is in Figure 1.¹⁰

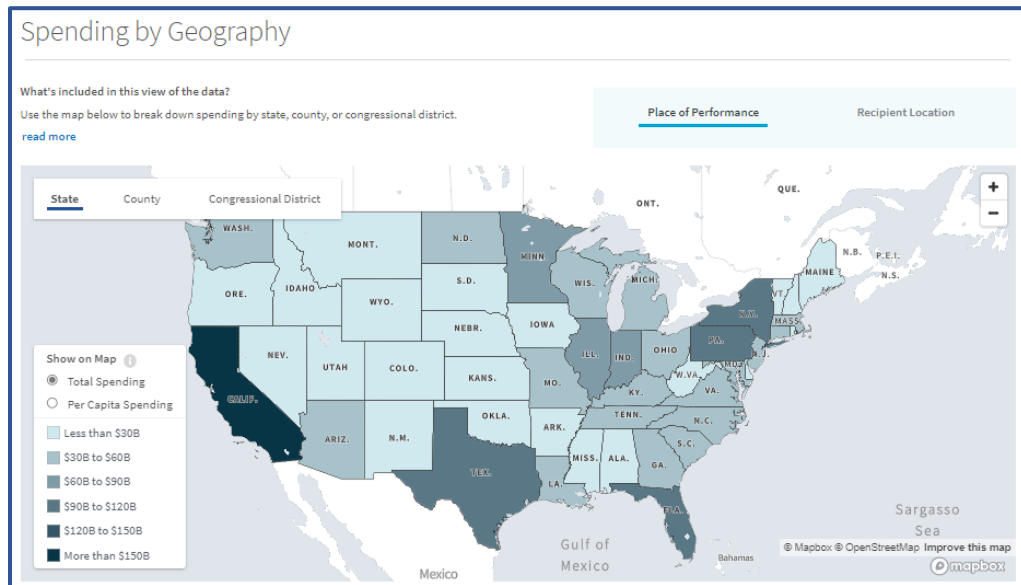


Figure 1. USA Spending by State Infographic, FY 2023

Federal Risk Mitigation Measures: “Protect Sea, Air, and Space”

The Banking Act of 1933 and Earned Value Management (EVM) 1967

In 1929, the lessons learned from bank failures, during the Great Depression, prompted the swift action of the United States Federal Government to pass the Glass-Steagall Act “The Banking Act” of 1933, which established the Federal Deposit Insurance Corporation (FDIC), that was signed into law by President Franklin D. Roosevelt. These federal laws, regulations, and government oversight “bank examinations [surveillance]” measures restored America’s confidence in the banking system and the federal government.¹¹

In 1967, like the government oversight laws in banking, EVM was pioneered “...by [industry] contractors and later Air Force executive A. Ernest “Ernie” Fitzgerald and Air Force Lt. Col. Hans “Whitey” Driessnack, captured industry’s best management practices [restore confidence in project cost and schedule status] and issued them in defense policy not as “how to” requirements but as 35 [now 32 guidelines] criteria for industrial management systems.¹²

For more than 50 years, EVM is virtually unchanged, as it captures program managements best practices, issued through defense policy, as the criteria for 32 guidelines with the DOD Instruction 7000.2 [later DoDI 5000.2], Cost/Schedule Control Systems Criteria (C/SCSC).¹³ The responsibility and requirements of government surveillance of contractors EVM business system is a critical component of EVM. The quantitative and qualitative surveillance analysis results shows whether data is current, accurate, timely, and reliable. Surveillance reveals the effectiveness of the contractor’s implementation and sustainment of compliance laws, policies, and internal management controls.

¹⁰ USAspending.gov. (2023, April 4). *Spending by Geography*. Federal Awards | Advanced Search | USA spending. <https://www.usaspending.gov/>

¹¹ Federal Reserve History. (1933), Banking Act of 1933 (Glass-Steagall). Banking Act of 1933 (Glass-Steagall) | Federal Reserve History

¹² Abba, Wayne F. (2017), Defense AT&L: March-April 2017. *The Evolution of Earned Value Management*. Defense AT & L Magazine (dau.edu)

¹³ Abba, Wayne F. (2017), Defense AT&L: March-April 2017. *The Evolution of Earned Value Management*. Defense AT & L Magazine (dau.edu)



The historical quantitative metric analysis results to the qualitative recommendations are documented and retained that revealed valuable insight into the integrity of the project's current cost and schedule status. The analysis results are used as a predictor of future cost and schedule growth compared to the past. In addition, the results will reveal any material weaknesses in data integrity that may require the projects to provide a root cause for the corrective action(s) with a plan that includes preventive measures to reduce the risk of reoccurrence.

FAR Rule Part 34.201(a): EVMS, Integrated Baseline Review (IBR), and Surveillance 2006¹⁴

On July 5, 2006, The Federal Register issued a FAR rule by the DoD, GSA, and NASA that amended FAR Part 34.201(a), Major System Acquisition, as follows:

to implement Earned Value Management System (EVMS) policy in accordance with OMB Circular A-11, Part 7 and the supplement to Part 7, the Capital Planning Guide... shall conduct an Integrated Baseline Review (IBR), ...Contracting Officer or a duly authorized representative as necessary to permit Government surveillance to ensure that the EVMS conforms, and continues to conform, with the performance criteria...

EVM Newsflash: Low Cost and High Value

EVM requirements promote sound planning and effective program execution, but baseless claims that EVM is high cost and low value are the norm among non-EVM practitioners. In the *Defense AT&L* January-February 2017 publication of "EVM Systems are High Cost - FACT or FICTION?" the authors reveal the results of the Joint Space Cost Council Better EVMS Implementation Survey conducted with industry contractors, DCMA, and the DoD Office of Performance Assessment and Root Cause Analyses.

The survey results from Phase I in 2015 and Phase II in 2016 verifies and validates that **EVM is low cost and high value to program managers as shown in Figure 2**. Authors: Ivan Bembers, National Reconnaissance Office (NRO) EVM Focal Point, Earned Value Management (EVM) Center of Excellence (ECE). He is responsible for EVM system acceptance and surveillance reviews, facilitating integrated baseline reviews and supporting programs' use of EVM across the enterprise. Ed Knox, Michelle Jones and Jeff Traczyk support EVM at the NRO.¹⁵

¹⁴ Federal Acquisition Regulation. (2006, July 5). Earned Value Management System (EVMS) (FAR Case 2004-019). Federal Register. <https://www.govinfo.gov/content/pkg/FR-2006-07-05/pdf/06-5966.pdf>

¹⁵ Bembers, Ivan, Know, Jones, Traczyk. (2017, January-February). *Defense AT&L*, *EVMS System's High Cost-Fact or Fiction?* Defense AT & L Magazine (dau.edu)



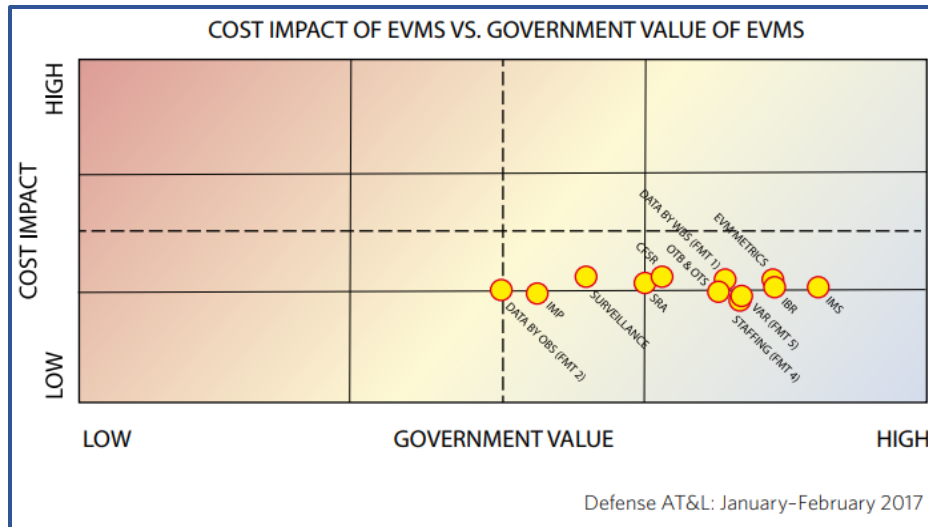


Figure 2. Cost Impact of EVMS vs. Government Value of EVM (2017)

National Security in Space

On September 4, 2022, at the U.S. Chamber of Commerce’s Global Aerospace Summit, leaders from industry, space, and aviation sectors collectively discussed how the development of space technologies, barriers in space exploration, impact national security, sustainability, and life on earth, as noted by Alexander MacDonald, NASA’s chief economist, in Figure 3.



Figure 3. Left to Right: Scott Pace, PhD, Former Executive Secretary of the National Space Council; Roy Azevedo, President, Raytheon Intelligence and Space; and Alexander MacDonald, Chief Economist, NASA (2022)

The Outer Space Treaty, signed by President Johnson, enforced the U.S. commitment to peaceful use of outer space exploration.¹⁶ In October 1967, the **Outer Space Treaty** was signed by three collective Governments (the **Russian Federation**, the **United Kingdom**,

¹⁶ United Nations Office for Outer Space Affairs. (1967, October). Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. The Outer Space Treaty (unoosa.org)

and the **United States of America**), entered into force under the United Nation Office for Outer Space Affairs. The treaty provides the basic framework on international space law with principles.

MacDonald emphasized that NASA’s return to the moon with the Artemis program is a national security measure that shows the world the capabilities of the United States. MacDonald said,

“...in order to maintain our security in a more general sense in Earth’s orbit, we need to maintain it as a place of rules, of behavior, [and] of norms,” he said. “In that regard, I think the support of the U.S. by the UN for a resolution around ASAT tests is incredibly important because that’s a commitment to a peaceful, lower orbit environment, which we all know is needed for business.”¹⁷

NASA – 2019 Economic Impact \$64.3 Billion¹⁸

In 1958, NASA was established with an initial funding of \$330M and in FY2023 NASA’s budgetary resources are \$32.35 Billion. NASA reported that in Fiscal Year (FY) 2021, that the diverse workforce is comprised of just under 18,000 civil servants and supports more than 312,000 [prime contractors/subcontractors (large and small businesses)] jobs across the United States. In addition, the workforce provides an extensive knowledge base that includes academia and international and commercial partners, which provide a benefit to humanity.¹⁹ The Agency’s Mission is to “Drive advances in science, technology, aeronautics, and space exploration to enhance knowledge, education, innovation, economic vitality, and stewardship of Earth,” and the funding details of the FY 2023 Summary of NASA’s \$32.35 Billion in budgetary resources infographic Figure 4.²⁰

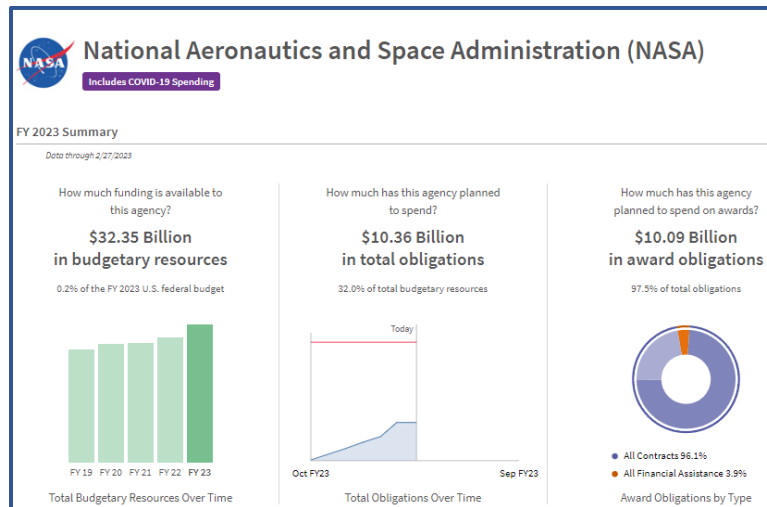


Figure 4. National Aeronautics and Space Administration (NASA) Budgetary Resources, FY 2023

¹⁷ U.S. Chamber of Commerce. (2022, September 14). How the U.S. Is Establishing National Security in Space. How the U.S. Is Establishing National Security in Space | U.S. Chamber of Commerce (uschamber.com)

¹⁸ NASA. (2020, September 25). Release 20-093. *NASA Report Details How Agency Significantly Benefits US Economy*. NASA Report Details How Agency Significantly Benefits US Economy | NASA

¹⁹ NASA. (Fiscal Year 2019). About NASA. About NASA | NASA

²⁰ NASA. (2023, February 27). FY 2023 Summary, National Aeronautics and Space Administration (NASA) | Spending Profile | USA spending. <https://www.usaspending.gov/>



People, Processes, and Tools

Small Business - EVM – NASA

On November 16, 1998, NASA enhanced the federal governments oversight to mitigate fiscal financial risk, as noted above by the banking laws of 1933, by updating the "...NASA FAR Supplement relative to the application of Earned Value Management (EVM) at NASA. The proposed change would establish NASA-wide clauses and provisions compatible with those used by DoD..."²¹ The Agency's insight cost for people, processes, and tools to support EVM compliance, IBR, and surveillance is negligible compared to the extraordinary benefits the analytical results provide to all stakeholders.

NASA's EVMS compliance and surveillance are functions that support, small business, key acquisition priorities, and are vital to effective mission management. The projects' cost and schedule status are reflected in the quantitative metric analysis to the qualitative recommendations from the EVM compliance and surveillance subject matter experts (SME)s. The **SMEs** are comprised of civil servants and employees on **small business contracts** e.g., Consolidated Program Support Services (CPSS) Program, Planning, and Control (PP&C).²² The overall surveillance objective is to ensure that management control processes support the projects Program Management Baseline (PMB) compliant with the EIA-748 EVM System guidelines.²³

There are 32 EVM compliance guidelines (GL) that are divided into five categories: Organization (GL 1-5); Planning, Scheduling, and Budgeting (GL 6-15); Accounting Considerations (GL 16-21); Analysis and Management Reporting (GL 22-27); and Revisions and Data Maintenance (GL 28-32). Surveillance is conducted by performing 142 DCMA EVMS Compliance Metrics (DECM) over a 3-year period. The metrics provide an objective methodology to assess the health of the EVMS. The implementation and validation of a project's EVMS along with surveillance increases cost and schedule visibility for stakeholders. The reliance on the right EVM people, process, and tools by the PMs and decisions makers is a risk mitigation measure that reduces project cancellations, strengthens national security, and builds the domestic industrial base sourcing of goods and services.

Small Business Encore Analytics Software Tool

Government Agencies, Military Services, Academia, Corporate Industry

The EVM analysts use manual and automated software tools contracted primarily from Encore Analytics that is a verified Veteran-Owned Small Business (VOSB) by the U.S. Department of Veterans Affairs. The Empower software is aligned to the Defense Contract Management Agency's DCMA EVMS Compliance Metrics (DECM) that provides automated analytic results for 73 of the 142 metrics. Encore Analytics' current customer base is comprised of more than 49 government, federal agencies, military services, academia, and corporate industry leaders. The most notable customers include NASA, the Department of Energy (DoE), the National Reconnaissance Office, the National Security Agency, NAVAIR, the U.S. Army, the U.S. Marine Corps, Lockheed, Raytheon, Northrup Grumman, other federal agencies, Defense Acquisition University (DAU), and industry.



²¹ Federal Register. (1998), Vol. 63, No. 220 / Monday, November 16, 1998 / Proposed Rules 63655, 98-30554.pdf (govinfo.gov)

²² NASA. (2021, May 12). Contract Release C21-011. NASA has selected Manufacturing Technical Solutions Inc. of Huntsville, Alabama. NASA Selects CPSS PP&C Contractor | NASA

²³ NASA EVM Implementation Handbook. (2023), NASA EVM Implementation Handbooks | NASA



The **Empower** software developed, supported, and maintained by **Encore Analytics (see the Empower Appendix)**. “Empower is the first and only browser-based analytical tool that integrates earned value, schedule, work authorization, and other key performance data to enable proactive management of complex projects.”²⁴ The manual and automated DECM analysis culminates in a series of validity checks and balances of the monthly cost and schedule performance as well as measuring the integrity of the data. When the analytic results reveal significant deficiencies in data integrity the projects are required to provide a root cause, implement a corrective action, and provide a preventative measure to prevent reoccurrence.



EVM – NASA, DoD, Military Services – DCMA Delegation

An example of Defense Contract Management Agency (DCMA) EVM delegation responsibilities is the NASA/DCMA Memorandum of Understanding (MOU) for Earned Value Management for EVM System Acceptance/EVM Project Surveillance. The MOU is used to delegate DCMA the responsibility “...for reviewing suppliers Earned Value Management (EVM) system plans and verifying initial compliance [and surveillance] with NASA and DOD Earned Value Management system criteria and conformity with ANSI Standard EIA-748, Industry Guidelines for Earned Value Management Systems.”²⁵

This research is focused on the value of Earned Value Management: System review, program management tools, and internal controls used to ensure government compliance with the integration of the scope of work to cost, schedule, and performance. As mentioned above, the DCMA EVMS Compliance Metrics (DECM) are being utilized for manual and automated analysis by NASA, other government agencies, and industry contractors. Factors: Cost or incentive contracts subject to the EVM clause.²⁶

There are two guides; one is for implementation, and the other is for interpretation, from the Office of “Acquisition Analytics and Policy (AAP)...is accountable for EVM Policy, oversight, and governance across the DOD” (AAP, 2019a, p. 1). The AAP Earned Value Management Implementation Guide (EVMIG) provides guidance for the EVM concepts, use, and application to contracts (AAP, 2019a, p. i). The AAP Earned Value Management System Interpretation Guide (EVMSIG) provides the “DOD interpretation of the 32 guidelines” (AAP, 2019b, p. 4). The guidance for interpretation of EVM policy pertains to several internal and regulatory requirements, for example, 32 guidelines covered in the EIA-748-C Standard, “Earned Value Management Systems,” and DFARS 252.234-7002, as well as DFARS Subpart 242.302, “Contract Administrations Functions, etc.” (AAP, 2019b, p. 90). Additionally, the DCMA-MAN 2301–01, Section 5: Earned Value Management System, provides guidance related to several internal and regulatory requirements (2019c).

The contractor must ensure they have the proper internal control tools and a formal documented process that includes standard business management practices. To this end, the contractor maintains internal controls documented in their EVM System Description (SD). As mentioned previously, the EVMS functional specialist must review and ensure that the contractor’s internal controls and business management practices comply with the 32 guidelines.

²⁴ Empower. (2023, April 5). Encore Analytics, Encore Analytics – Actionable insight for complex projects. (encore-analytics.com)

²⁵ NASA/DCMA Memorandum of Understanding for Earned Value Management (n.d.), NASA/DCMA Memorandum of Understanding for Earned Value Management | NASA

²⁶ Government Accountability Office. (2019). Contractor business systems: DOD needs better information to monitor and assess review process (GAO-19-212). <https://www.gao.gov/assets/700/696801.pdf>



DCMA – Contract Management

In fiscal year 2021, the Defense Contract Management Agency (DCMA) celebrated more than two decades of delivering contract management support to the nation's warfighters. DCMA reports to the under secretary of defense for acquisition and sustainment and is a valued contributor to the greater national defense team, ensuring readiness and delivering 409.2 million items to the warfighter annually. According to the DCMA Insight Magazine, a yearly publication where the agency provides data related to its contract management role. DCMA's role is primarily funded by the military or federal government (e.g., **Department of the Army, Navy, Marines, Air Force, or NASA**). The agency's oversight role, as the first line of defense against fraud, waste, and abuse of taxpayer dollars, ensures that a contractor business system (CBS) is compliant. Since it has managed more than 232,166 contracts at 13,335 contractor facilities valued at \$4.55 trillion, there is a return on investment of 1.44 to 1 on every dollar invested.²⁷ This measure is critical in identifying fraud, waste, and abuse of taxpayer dollars.



Role of the DCMA and DCAA

The DCMA is the cognizant federal agency responsible for the management of contracts. Additionally, these laws and timelines directly affect the DCAA and DCMA as they are the government audit agencies responsible for surveillance and auditing of DoD contractor accounting systems. A DCMA or DCAA functional specialist issues a business system report, and they make compliance recommendations to the DCMA through an audit report (FAR 42.101, 2020).

DCMA issues a business system analysis summary (BSAS) for

- Earned value management systems (EVMS; DFARS 252.234-7002)
- Contractor property management systems (DFARS 252.245-7003, 2012)
- Contractor purchasing systems (CPSR; DFARS 252.244-7001, 2014)

DCAA issues a business system report (audit report) for

- Accounting systems (DFARS 252.242-7006, 2012)
- Cost estimating systems (DFARS 252.215-7002, 2012)
- Material management and accounting systems (MMAS; DFARS 252.242-7004, 2011)

When the military or federal government (e.g., Department of the Army, Navy, Marines, Air Force, or NASA) awards a contract, if the program manager (PM) uses the DCMA to manage the contract, the procurement contracting officer (PCO) will send a delegation authority to the DCMA. The PCO can withhold all but FAR 42.302 (2020), Contract Administration Functions, to the DCMA:

The contracting officer normally delegates the following contract administration functions to a contract administration office [CAO]. The contracting officer may retain any of these functions, except those in paragraphs (a)(5), (a)(9), (a)(11) and (a)(12) of this section, unless the cognizant Federal agency (see 2.101) has designated the contracting officer to perform these functions. (FAR 42.302, 2020)

²⁷ Tremblay, P. (2021). Agency awarded expanded mission. *Defense Contract Management Agency Insight*, DCMA_Insight_2022.pdf



In addition to the clauses, DCMA directives, policies, manuals, and instructions are used to determine and mitigate risk with the contractor business systems. The DCMA provides contract oversight, surveillance, and compliance processes when performing contractor business system compliance reviews and evaluating data integrity.

It is DCMA policy to

- Ensure contractors maintain effective business systems, processes, and procedures
- Perform contractor business system reviews and determinations in a multifunctional, integrated, synchronized, and coordinated manner
- Execute this [DCMA-MAN 2301-01] manual in a safe, efficient, effective, and ethical manner²⁸

GSA Provides Guidance for Buying Agencies - Small Business

The focus for this research is the support of GSA to the Office of Small Business, which provides nationwide coverage for national security and building the industrial base. GSA provides workplaces, acquisition solutions, promotes management best practices for efficient government operations through the development of governmentwide policies.²⁹ Their goal is to meet and exceed statutory prime and subcontracting small business and socio-economic small business goals. GSA assists small businesses in finding federal contract opportunities. In addition, GSA's assistance with nationwide procurement opportunities, ensures small business participation, and training.³⁰



Small Business Improvement Acts

On February 3, 2022, Small Business Committee Passes and Recommends Five Bills to the House of Representatives that will help American small business entrepreneurs succeed, which are shown below.³¹



H.R. 6445, Small Business Development Centers Improvement Act of 2022 - to amend the Small Business Act to require an annual report on entrepreneurial development programs, and for other purposes. On April 26, 2022, passed House.

H.R. 6441, Women's Business Centers Improvement Act of 2022 - to amend the Small Business Act to improve the women's business center program, and for other

²⁸ Defense Contract Management Agency. (2019c, April 28). Contractor business system (DCMA-MAN 2301-01). Department of Defense. <https://www.dcmamail.com/Portals/31/Documents/Policy/DCMA-MAN-2301-01.pdf?ver=2019-05-03-123122-347>

²⁹ U.S. General Services Administration. (2022). About us. About Us | GSA

³⁰ U.S. General Services Administration. (2022). FY 2024 Annual Performance Plan and FY 2022 Annual Performance Report. Office of Small and Disadvantaged Business Utilization | GSA

³¹ House Small Business Committee Republicans (2022, February 3). Small Business Committee Passes and Recommends Five Bills to the House of Representatives.



purposes. On April 27, 2022, received; read twice and referred to the Committee on Small Business and Entrepreneurship.

H.R. 6450, SCORE for Small Business Act of 2022 - to amend the Small Business Act to reauthorize the SCORE program, and for other purposes. On April 26, 2022, passed House.

H.R. 4877, "ONE STOP SHOP FOR SMALL BUSINESS COMPLIANCE ACT OF 2021" - To amend the Small Business Act to require the Small Business and Agriculture Regulatory Enforcement Ombudsman to create a centralized website for compliance guides, and for other purposes. **On October 10, 2022, Public Law No: 117-188³²**

H.R. 6454, Small Business Advocacy Improvements Act of 2022 - to clarify the primary functions and duties of the Office of Advocacy of the Small Business Administration, and for other purposes. On April 26, 2022, passed House.

Office of Small Business Programs DoD Mentor Protégé Program

The OSBP is under the Small Business Act that established mandatory small business contracting goals and programs that apply to **DOD and all Federal agencies** (Office of Small Business Programs, 2022, April 5).³³ Its mission is to contribute to national security by maximizing opportunities for small businesses that provide combat supplies for our troops and economic sustainment for our nation. One of the highest responsibilities is the management of the DOD Mentor Protégé Program (MPP). The program is critical to developing high priority sectors of the **DOD Industrial Base** (OSBP, 2022). A representation of some of the DOD MPP Project Spectrum Program Partnerships is shown in Figure 5 (Diaz, 2021, pg. 6).

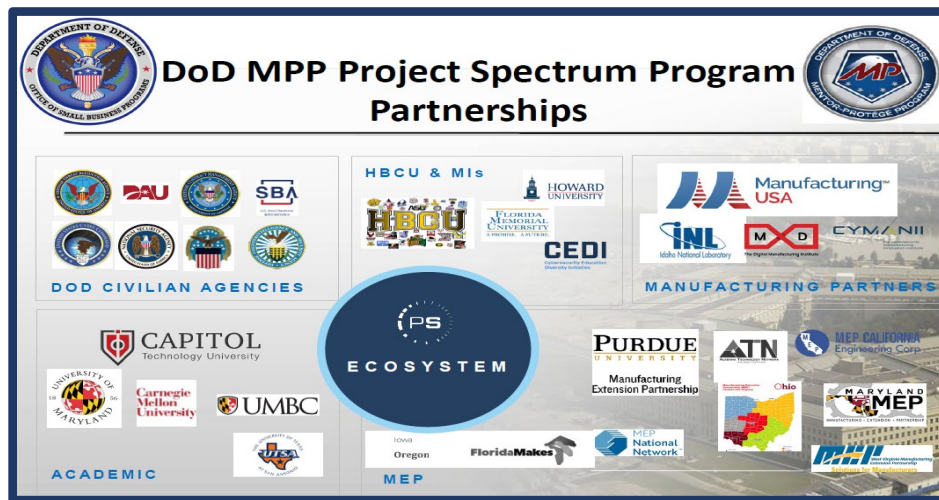


Figure 5. Extracted From DoD MPP Project Spectrum Program Partnerships (Diaz, 2021)

On November 5, 1990, H.R. 4739 – National Defense Authorization Act (NDAA) for Fiscal Year (FY) 1991, directs the Secretary of Defense to establish a Mentor-Protégé Program [MPP] to provide incentives to major DOD contractors (mentors) to help

³² H.R.4877 - One Stop Shop for Small Business Compliance Act of 2021, Public Law 117-188, (2022, October 10). H.R.4877 - 117th Congress (2021-2022); One Stop Shop for Small Business Compliance Act of 2021 | Congress.gov | Library of Congress

³³ Office of Small Business Programs (2022, April 5). Mentor-Protégé Program (MPP).



disadvantaged small businesses (protégés) perform as subcontractors and suppliers under DOD and other government contracts.³⁴

On October 1, 1991, the DOD MPP was the first operative federal mentor-protégé program that since its inception as a pilot program. It has received continuous funding extensions as a pilot despite the 1994-scheduled expiration. Currently, it is funded through FY2026 for reimbursement of cost incurred under existing agreements and FY2024 for the formation of new agreements. DOD's MPP is the only federal pilot program that is mandated by law and receives authorized and appropriated funds (Mentor Protégé Pilot Program, 1990).³⁵

Historically, the DoD's Mentor-Protégé Program is a front-runner with mentors' commitment to leveraging small business protégés in successfully growing the DIB, but the Office of the Secretary of Defense (OSD) must champion support and funding for the MPP. In FY20, the MPP experienced a zeroed-out funding from the DoD in the FY2020 Defense Wide Review (DWR). The President's Budget Request (PBR) rescued funding for the MPP by adding it back in for FY2021 (Defense Business Board [DBB], 2022, p. 33).

Sec. 856. Codification of the Department of Defense Mentor–Protégé Program

December 23, 2022, President Joe Biden signed the H.R.7776 - James M. Inhofe National Defense Authorization Act for Fiscal Year 2023 National Defense Authorization Act³⁶, funding \$858 Billion for **DOD and national security programs** under the Department of Energy. Notably, since 1991 the Mentor- Protégé Program Pilot withstood the test of time for 32 years until the 856. Codification, which is no longer a pilot program. The eligibility threshold for mentors dropped \$25M in the total of defense contracts. In addition, the MPP participation duration extends to three years. To strengthen the software development DIB, Sec. 856 establishes a five-year Protégé Technical Reimbursement Program with an incentive to the protégé and mentor. The protégé firm may receive up to 25 percent of the reimbursement that is also offered to the mentor in the agreement for the engineering and software development that will be integrated with a DOD program or system. The **DCMA and NASA Mentor-Protégé point of contacts** are as follows:


³⁴ National Defense Authorization Act (1990, November 5). Pub. L. No. 101-510, 104 STAT. 1490, Title VIII: Acquisition Policy, Acquisition Management, and Related Matters - Part D: Miscellaneous, Sec. 831. Mentor-protégé pilot program (1990).

³⁵ Mentor-Protégé Pilot Program, Section 807 (a) of Pub. L. 102-484 (1991).

³⁶ National Defense Authorization Act (2022, December 23). Pub. L. No. 117-263, Subtitle E – Industrial Base Matters. Codification of the Department of Defense Mentor-Protégé Program. Text - H.R.7776 - 117th Congress (2021-2022): James M. Inhofe National Defense Authorization Act for Fiscal Year 2023 | Congress.gov | Library of Congress



The DCMA and NASA Mentor Protégé Program Points of Contacts
DCMA Mentor Protégé – Angela Dokes³⁷

 <p>Angela Dokes Mentor-Protégé Program Team Lead, Defense Contract Management Agency (DCMA)</p>	<p>Angela Dokes Mentor-Protégé Program Team Lead, Defense Contract Management Agency (DCMA)</p> <p>Ms. Dokes serves as the Team Lead for the Defense Contract Management Agency (DCMA) Mentor-Protégé Program (MPP) team. She has over 14 years of experience working with DCMA, including five years in contracts. In her role as the Team Lead, Mrs. Dokes is responsible for the administration and reporting of the Department of Defense (DoD) Mentor Protégé Program (MPP) to include providing data for congressional inquiries. Ms. Dokes is Lean Six Sigma, Yellow Belt Certified, Small Business Professional Certified, DAWIA Level III Certified, and is a member of the Defense Acquisition Corps.</p> <p>Prior to her government career, Ms. Dokes worked as a teacher/ administrator in Public Education for 15 years. Ms. Dokes holds a Bachelor of Science in Math Education from the University of Arkansas at Pine Bluff and a Masters in Educational Administration from Lindenwood University.</p>
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NASA Mentor Protégé – Glen A. Delgado³⁸

 <p>Glen A. Delgado Associate Administrator for Small Business Programs</p>	 <p>Delgado provides executive leadership and policy direction for developing and implementing initiatives, that ensure all categories of small businesses are afforded opportunities to compete for agency contracts.</p> <p>With more than 40 years of acquisition experience, Delgado has received several awards and medals, including the Presidential Rank Award (Meritorious Service). The Congressional Black Caucus honored Delgado as a Small Business Champion Living Legends Award. He also received two NASA Outstanding Leadership Medals and the NASA Exceptional Service Medal.</p> <p>Delgado earned a Bachelor of Science degree from the University of New Hampshire and a Master of Business Administration degree from Marymount University. He is Level III-certified in the acquisition professional field of contracting and a member of the acquisition professional community.</p>
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³⁷ Dokes, Angela. (2023, April 5). DCMA. Mentor Protégé Program. Small Business (dcma.mil)

³⁸ Delgado, Glenn A. (2023, April 5). NASA. Small Business Programs. Glenn A. Delgado | NASA



Appendix. Empower, Encore Analytics



Encore Analytics LLC is a verified Veteran-Owned Small Business (VOSB) by the U.S. Department of Veterans Affairs. The customer base of more than 49 is comprised of government, federal agencies, military services, academia, and corporate industry leaders. The most notable customers include NASA, the Department of Energy (DOE), the National Reconnaissance Office, the National Security Agency, the Missile Defense Agency, NAVAIR, the U.S. Army, the U.S. Marine Corps, Lockheed Martin, Raytheon, Northrop Grumman, other federal agencies, Defense Acquisition University (DAU), and industry (customer base listed below).

The customer base uses Empower, an enterprise level web-based analytical tool to collect earned value and schedule performance data from suppliers in standardized electronic formats. The system contracts are loaded in an enterprise database, then populated and managed by a central staff. The analytical tool allows for timely dissemination of integrated cost/schedule performance data to all program stakeholders via a single web URL that contains tailored dashboards for various roles including program managers, government technical managers, schedule analysts, and cost analysts.

Empower is also capable of running standardized data quality checks in accordance with the DCMA DECM tests for compliance professionals to evaluate supplier data quality. This ability of the customer to test data quality has significantly improved with the new Integrated Program Management Data and Analysis Report (IPMDAR) delivery specifications for cost (earned value) and the integrated master schedule (IMS) data on new contracts. The IPMDAR formats are currently in use by most of Encore Analytics' customers. The formats allow the customer to receive better integrated cost and schedule data, as well as data at a more detailed level (control account or work package) with element of cost delineation. This allows the customer to quickly identify the root cause of cost issues and schedule delays for corrective action initiatives and/or estimate at completion updates.

The use of Empower, especially as a corporate enterprise program performance analytical tool, eliminates software costs, software maintenance costs, IT support costs, and training costs for all customer programs since it is centrally funded. Also, since Empower is a widely used tool, it is relatively easy to find and hire experienced resources familiar with the tool.

Empower allows for integration with external data sources as well as other web-based tools. Encore Analytics has provided integrated Empower capabilities within web-based systems such as the Program Analysis and Reporting System (PARS) for analytics. PARS includes all programmatic data, including scope of work, budget, budget execution, risk management, key program milestones, etc.

To accelerate and increase the software's adoption, dashboards can be deployed at an enterprise level and customized for each user. A series of notional dashboards are included in this paper to illustrate dashboards by role (PM, technical manager, cost/schedule analyst, compliance manager, etc.).



Notional Program Manager (PM) Dashboards

The dashboards shown in this section include multiple projects/contracts that a PM might be responsible for. Projects can be grouped into programs or portfolios and have interactive drill-down to locate significant cost and/or schedule drivers for management-by-exception. The tool allows configuration by role to reduce menu items and options to make the tool more intuitive for senior managers who only occasionally review contract performance data. Notional dashboards are provided.

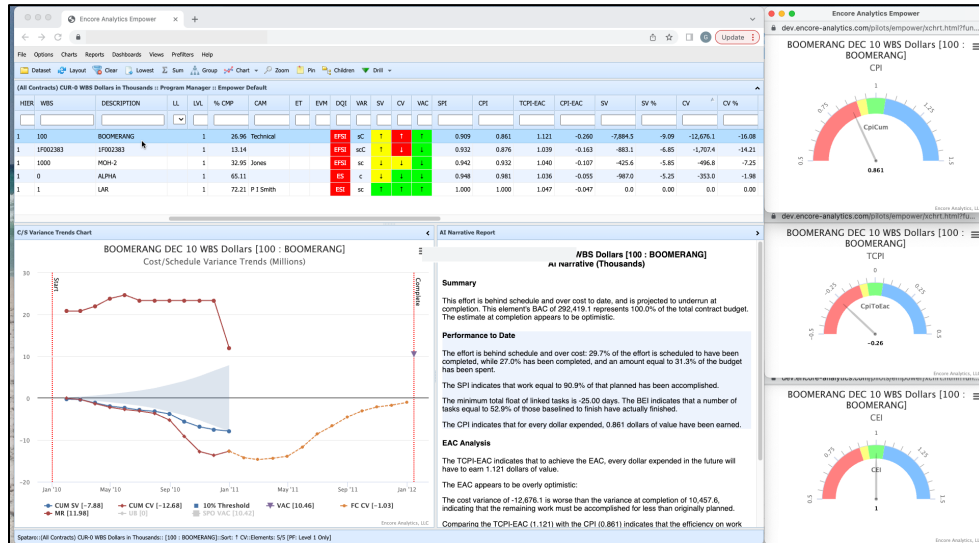


Figure 8. PM Contract Performance

The PM Contract Performance dashboard shows in the grid all contracts the PM has responsibility for with color coded performance indicators, trend arrows and key performance metrics for each contract. The PM can sort or filter on any field and/or drill down to the root cause of the variance. The charts, reports and gauges automatically update as the PM selects new projects or elements within a project. This dashboard displays a trend chart of cost/schedule variances with a light blue shaded tolerance threshold, a rule-based assisted intelligence (AI) Narrative Report that transforms the performance data to explanatory text regarding the performance, and three gauges showing key performance metrics.

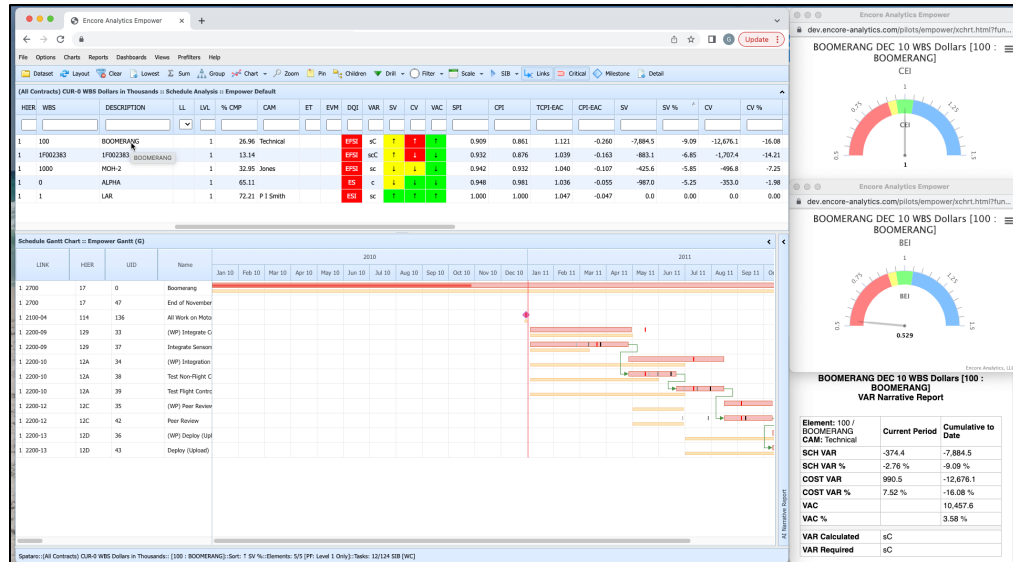


Figure 9. PM IMS Dashboard

This dashboard shows the critical path for each selected contract along with the IMS related Critical Execution Index (CEI) and Baseline Execution Index (BEI) gauges and the contractor's narrative submission regarding the performance on the contract. Note in the schedule Gantt display, it shows finish dates reported in prior schedules with the "I" bars in black and shades of gray and (I) as the drop-dead date for negative float. This allows the program manager to see slips on the critical path and if negative float exists in the schedule which is a key indicator of risk.

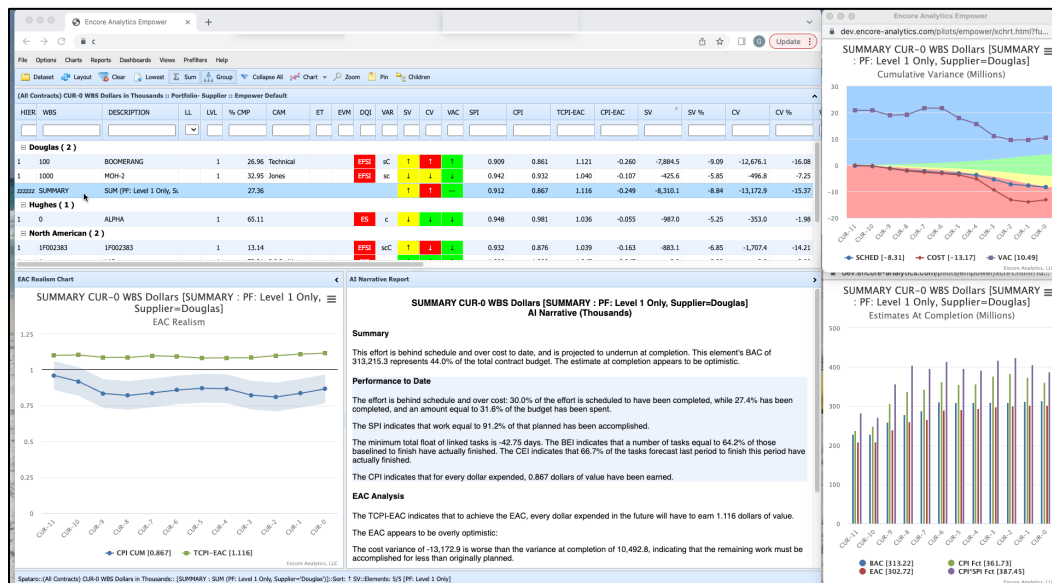


Figure 10. PM Portfolio Dashboard

This dashboard groups projects by supplier and provides for a summary line where the aggregate performance for that supplier can be analyzed. This type of view can be used to determine if performance is an issue on a single contract or might be a broader problem with a certain supplier.



Technical Manager/Analyst Dashboards

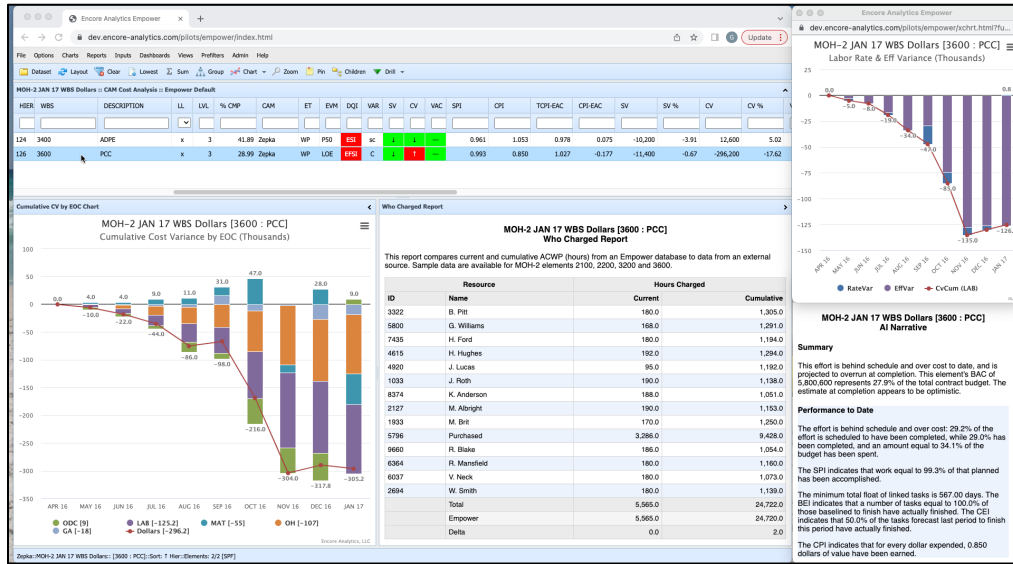


Figure 11. Detailed Cost Dashboard

This dashboard displays the two accounts assigned to government focal point “Zepka” along with an Element of Cost (EOC) chart (lower left) that shows the cost variance (CV) broken out by EOC (Labor, Material, Other Direct Charges [ODC], Overhead [OH] and General & Administrative [G&A]). Note that labor is a large contributor to the negative CV, so two more widgets are displayed as additional information regarding labor performance for this account. The first is the Who Charged Report that shows individuals or subcontractors who charged labor to this account. The second is the Labor Rate and Efficiency Variance Chart in the upper right corner. This chart clearly shows the labor issue is an efficiency problem where more hours are being expended to complete work than planned.

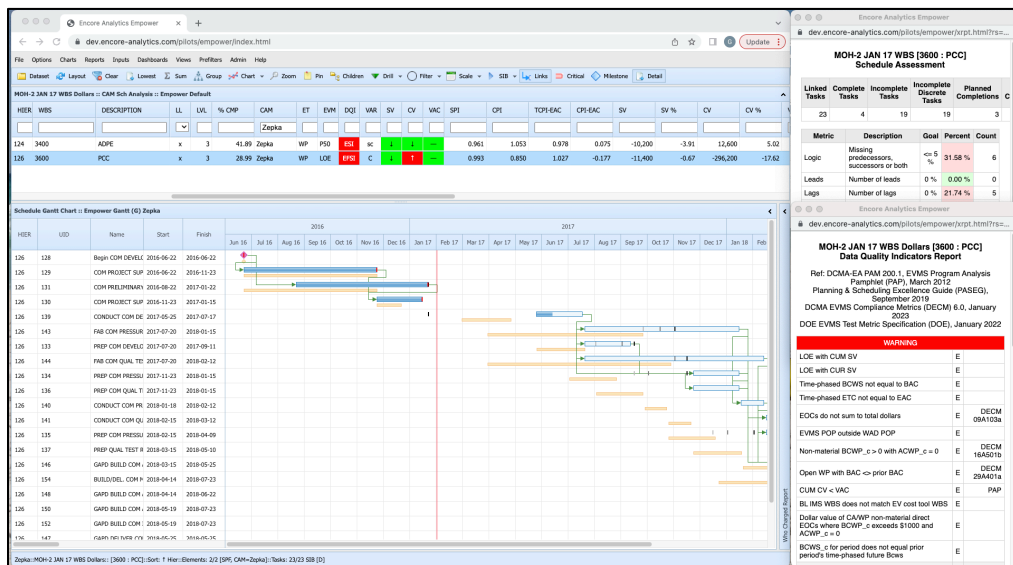


Figure 12. Detailed Schedule Dashboard

This dashboard shows schedule activities for the selected account with data quality indicator reports to the right.



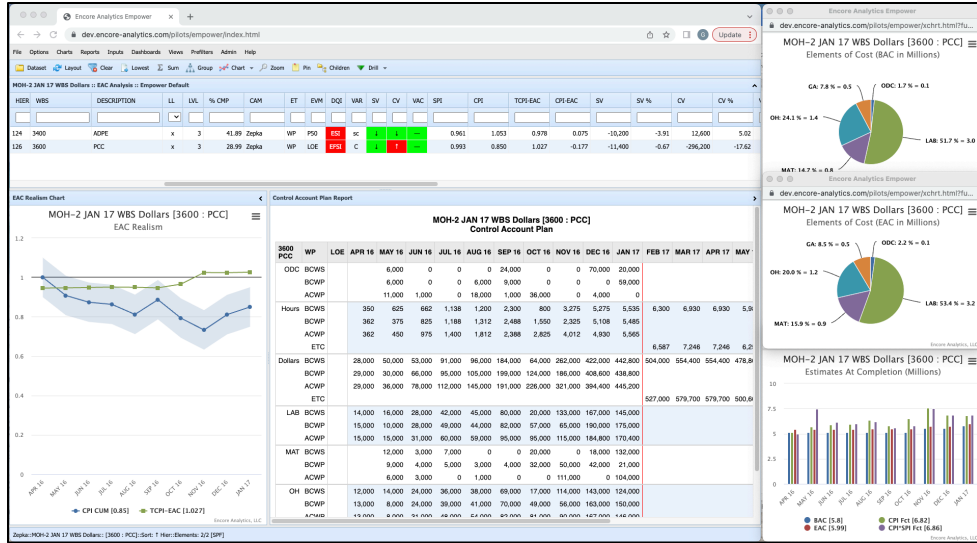


Figure 13. Estimate at Completion (EAC) Dashboard

This dashboard shows a report like a Control Account Plan (CAP) and charts related to EAC Realism, mathematically calculated EACs, and pie charts that break out EOCs by the budget and the estimate at complete.

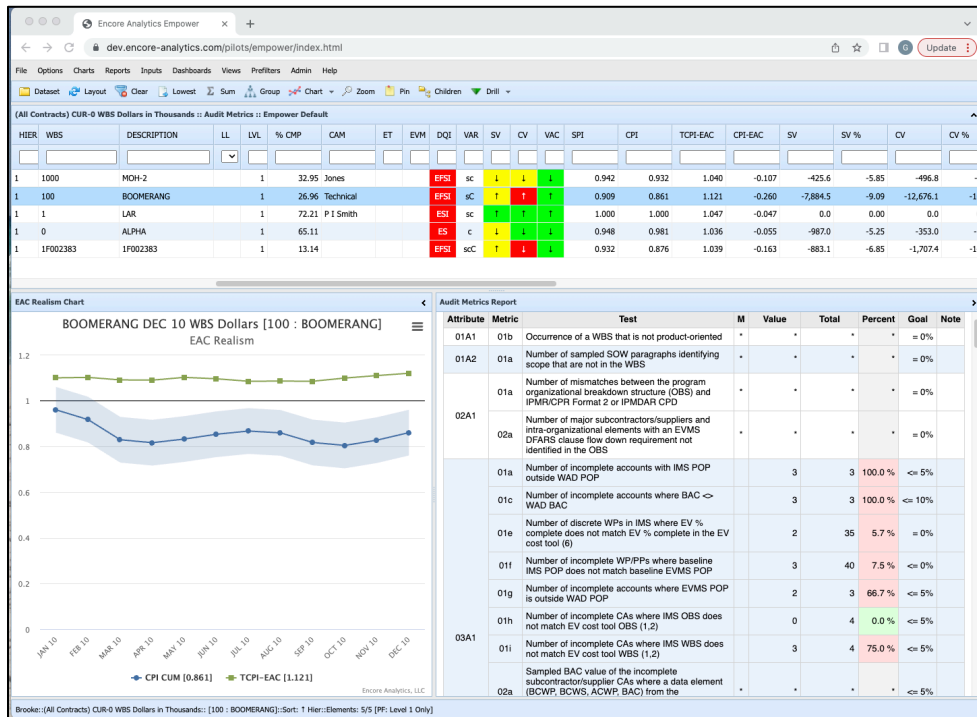




Figure 14. Compliance Manager Dashboard

The compliance manager dashboard shows the Audit Metrics Report with the numerator, denominator, and goal for each test. Tests with a "*" in the "M" column are manual tests per DCMA instructions, and the remaining 73 tests can be automatically calculated by the Empower software from the performance data.



 	
No	Customer Base*
1	Austal
2	Betchel
3	Blue Halo
4	Blue Origin
5	Brookhaven National Laboratory
6	Cobham
7	Consolidated Nuclear Security/Y12 National Security Complex
8	Defense Acquisition University
9	Department of Energy
10	Eastern Shipbuilding
11	Fincantieri Marinette Marine
12	Four Rivers Nuclear Partnership
13	General Atomics Aeronautical
14	Honeybee Robotics
15	Honeywell FM&T KCNSC
16	Idaho National Laboratory
17	Jacobs
18	John Hopkins Applied Physics Laboratory
19	L3Harris
20	Lawrence Livermore National Laboratory
21	Lockheed Martin Aeronautics
22	Lockheed Martin Space
23	Los Alamos National Laboratory
24	Mid-America Conversion Services
25	Missile Defense Agency
26	Mission Support and Test Services, LLC
28	NASA
29	NASA Jet Propulsion Laboratory
30	National Nuclear Security Administration
31	National Reconnaissance Office
32	National Security Agency
33	NAVAIR
34	Northrop Grumman
35	Orbital/ATK
36	ORCC Oak Ridge
37	Pratt & Whitney
38	Progeny Systems
39	Raytheon
40	Rolls Royce
41	Sandia National Laboratories
42	Savannah River Remediation
43	Sierra Nevada Corporation
44	Sierra Space
45	Southwest Research Institute
46	US Army
47	US Marine Corps
48	VT Halter Marine
49	Washington River Protection Solutions

*List is as of September 2022

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